

Sequences and Series Day 5

Date _____ Period _____

Write the explicit formula for each sequence.

1) 1, 4, 9, 16, 25, ...

2) -1, 4, -16, 64, -256, ...

3) -3, -18, -108, -648, -3888, ...

4) -13, -8, -3, 2, 7, ...

Find the tenth term in each sequence.

5) $a_n = 2^{n-1}$

6) $a_n = 20 + 10n$

7) $a_n = -3 \cdot \left(\frac{1}{3}\right)^{n-1}$

8) $a_n = -\frac{20}{21} + \frac{5}{3}n$

9) $a_n = a_{n-1} \cdot -2$
 $a_1 = -4$

10) $a_n = a_{n-1} + 1.1$
 $a_1 = -11$

11) $a_n = a_{n-1} \cdot -3$
 $a_1 = 2$

12) $a_n = na_{n-1}$
 $a_1 = -1$

Determine if the sequence is arithmetic. If it is, find the common difference, the term named in the problem, and the explicit formula.

13) 35, 27, 19, 11, ...
Find a_{35}

14) 7, 16, 25, 34, ...
Find a_{40}

15) -26, -32, -38, -44, ...
Find a_{36}

16) -19, -23, -27, -31, ...
Find a_{36}

Determine if the sequence is geometric. If it is, find the common ratio, the term named in the problem, and the explicit formula.

17) $-2, -6, -18, -54, \dots$
Find a_{12}

18) $-4, 8, -16, 32, \dots$
Find a_9

19) $-4, 16, -64, 256, \dots$
Find a_9

20) $2, 4, 8, 16, \dots$
Find a_{12}

Evaluate each series.

21) $\sum_{n=1}^5 (n + 300)$

22) $\sum_{m=1}^7 (20 - m^2)$

23) $\sum_{n=1}^5 (20 - n^2)$

24) $\sum_{m=1}^6 m(m - 2)$

Rewrite each series using sigma notation.

25) $1 + 2 + 3 + 4 + 5$

26) $2 + 4 + 6 + 8 + 10 + 12$

27) $401 + 402 + 403 + 404 + 405 + 406$

28) $3 + 6 + 9 + 12 + 15$

Evaluate each arithmetic series described.

29) $a_1 = 11, a_n = 59, n = 9$

30) $a_1 = 35, a_n = 143, n = 13$

31) $a_1 = 9, a_n = 81, n = 9$

32) $a_1 = 10, a_n = 20, n = 6$

33) $(-36) + (-46) + (-56) + (-66) \dots, n = 20$

34) $12 + 22 + 32 + 42 \dots, n = 16$

35) $23 + 33 + 43 + 53 \dots, n = 18$

36) $38 + 48 + 58 + 68 \dots, n = 10$

Answers to Sequences and Series Day 5 (ID: 1)

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|--|--|--|-----------------------------|
| 1) $a_n = n^2$ | 2) $a_n = -(-4)^{n-1}$ | 3) $a_n = -3 \cdot 6^{n-1}$ | 4) $a_n = -18 + 5n$ |
| 5) $a_{10} = 512$ | 6) $a_{10} = 120$ | 7) $a_{10} = -\frac{1}{6561}$ | 8) $a_{10} = \frac{110}{7}$ |
| 9) $a_{10} = 2048$ | 10) $a_{10} = -1.1$ | 11) $a_{10} = -39366$ | 12) $a_{10} = -3628800$ |
| 13) Common Difference: $d = -8$
$a_{35} = -237$
Explicit: $a_n = 35 + (n - 1) \cdot -8$ | | 14) Common Difference: $d = 9$
$a_{40} = 358$
Explicit: $a_n = 7 + (n - 1) \cdot 9$ | |
| 15) Common Difference: $d = -6$
$a_{36} = -236$
Explicit: $a_n = -26 + (n - 1) \cdot -6$ | | 16) Common Difference: $d = -4$
$a_{36} = -159$
Explicit: $a_n = -19 + (n - 1) \cdot -4$ | |
| 17) Common Ratio: $r = 3$
$a_{12} = -354294$
Explicit: $a_n = -2 \cdot 3^{n-1}$ | 18) Common Ratio: $r = -2$
$a_9 = -1024$
Explicit: $a_n = -4 \cdot (-2)^{n-1}$ | 19) Common Ratio: $r = -4$
$a_9 = -262144$
Explicit: $a_n = -4 \cdot (-4)^{n-1}$ | |
| 20) Common Ratio: $r = 2$
$a_{12} = 4096$
Explicit: $a_n = 2 \cdot 2^{n-1}$ | 21) 1515 | 22) 0 | |
| 23) 45 | 24) 49 | 25) $\sum_{a=1}^5 a$ | 26) $\sum_{m=1}^6 2m$ |
| 27) $\sum_{m=1}^6 (m + 400)$ | 28) $\sum_{m=1}^5 3m$ | 29) 315 | 30) 1157 |
| 31) 405 | 32) 90 | 33) -2620 | 34) 1392 |
| 35) 1944 | 36) 830 | | |